UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/787,363	02/26/2004	Robert S. Taylor	2003-IP-012051U1	4792

7590 06/06/2006

Robert A. Kent
Halliburton Energy Services
2600 South 2nd Street
Duncan, OK 73536-0440

EXAMINER	
COY, NICOLE A	

ART UNIT	PAPER NUMBER
3672	

DATE MAILED: 06/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/787,363	TAYLOR ET AL.	
	Examiner	Art Unit	
	Nicole Coy	3672	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 March 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 3/31/06
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 12, 16-20, 28, and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Mzik (USP 4,825,952).

With respect to claims 1 and 17, Mzik discloses a method of treating/fracturing a subterranean formation comprising the steps of: providing a servicing fluid comprising carbon dioxide and a hydrocarbon blend, wherein the hydrocarbon blend comprises at least about 65% hydrocarbons having from six carbons (C.sub.6) to eleven carbons (C.sub.11) (see abstract and column 2 lines 34-38); and placing the servicing fluid into the subterranean formation (see column 1 lines 12-15).

With respect to claims 2 and 18, Mzik discloses a hydrocarbon blend that comprises at least about 65% hydrocarbons having from seven carbons (C.sub.7) to ten carbons (C.sub.10) (see abstract and column 2 lines 34-38).

With respect to claims 3 and 19, Mzik discloses a hydrocarbon blend where about 85% of the hydrocarbon blend comprises hydrocarbons having eight carbons (C.sub.8), hydrocarbons having nine carbons (C9), or a mixture of hydrocarbons having eight carbons (C.sub.8) and hydrocarbons having nine carbons (C9) (see abstract and column 2 lines 34-48).

With respect to claims 4 and 20, Mzik discloses a hydrocarbon blend has a Reid Vapor pressure below about 2 psi (The Reid vapor pressure would inherently be below about 2 psi as the composition of Mzik is substantially identical to the claimed composition).

With respect to claims 12 and 28, Mzik discloses a servicing fluid that further comprises particulates (see abstract).

With respect to claims 16 and 32, Mzik discloses a servicing fluid that comprises from about 30 volume % to about 80 volume % carbon dioxide by volume of hydrocarbon blend (see column 2 lines 34-38, wherein Mzik discloses 15-90% carbon dioxide by volume of hydrocarbon blend).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 5, 6, 14, 15, 21, 22, 30, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mzik.

With respect to claims 5 and 21, Mzik teaches that a hydrocarbon component can be added in an amount of 5-85 %. Mzik further teaches that the hydrocarbon component can be a C_5-C_{14} constituent. Mzik does not specifically teach a hydrocarbon blend with less than 1% hydrocarbons having more than ten carbons. However, where

the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). Routine experimentation would have led one having ordinary skill in the art to form a hydrocarbon blend with less than 1% hydrocarbon having more than 10 carbons.

With respect to claims 6 and 22, Mzik teaches that a hydrocarbon component can be added in an amount of 5-85 %. Mzik further teaches that the hydrocarbon component can be a C_5-C_{14} constituent. Mzik does not specifically teach a hydrocarbon blend with less than 1% hydrocarbons having fewer than seven carbons. However, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). Routine experimentation would have led one having ordinary skill in the art to form a hydrocarbon blend having less than 1% hydrocarbons having fewer than seven carbons by.

With respect to claims 14 and 30, Mzik teaches that a hydrocarbon component can be added in an amount of 5-85 %. Mzik further teaches that the hydrocarbon component can be a C_5-C_{14} constituent. Mzik does not specifically teach a hydrocarbon blend with less than 1% hydrocarbons having fewer than seven carbons about 5% hydrocarbons having seven carbons, about 44% hydrocarbons having eight carbons, about 43% hydrocarbons having nine carbons, about 8% hydrocarbons having ten carbons, and less than about 1% hydrocarbons having more than ten carbons. However, where the general conditions of a claim are disclosed in the prior art, it is not

inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). Routine experimentation would have led one having ordinary skill in the art to form a hydrocarbon blend comprising less than about 1% hydrocarbons having fewer than seven carbons (C.sub.7), about 5% hydrocarbons having seven carbons (C.sub.7); about 44% hydrocarbons having eight carbons (C.sub.8); about 43% hydrocarbons having nine carbons (C.sub.9); about 8% hydrocarbons having ten carbons (C.sub.10); and less than about 1% hydrocarbons having more than ten carbons (C.sub.10).

With respect to claims 15 and 31, Mzik teaches that a hydrocarbon component can be added in an amount of 5-85 %. Mzik further teaches that the hydrocarbon component can be a C_5-C_{14} constituent. Mzik does not specifically teach a hydrocarbon blend comprising substantially no hydrocarbons having more than eleven carbons. However, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). Routine experimentation would have led one having ordinary skill in the art to form a hydrocarbon blend comprising substantially no hydrocarbons having more than eleven carbons.

5. Claims 7-10, 13, 23-26, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mzik in view of Taylor et al. (USP 6,511,944).

With respect to claims 7-10 and 23-26, Mzik does not teach a service fluid comprising a gelling agent present in an amount in the range of from about 0.1% to

about 2.5% by weight of the hydrocarbon blend. Taylor teaches a hydrocarbon servicing fluid comprising a gelling agent of ferric iron or aluminum polyvalent metal salt of a phosphoric acid ester present in an amount in the range of from about 0.1% to about 2.5% by weight of the hydrocarbon blend in order to minimize volatile phosphorus in refinery distillation towers (see column 3 lines 56-59, column 4 lines 12-22, and column 6 lines 52-55). It would have been obvious to one having ordinary skill in the art to modify the servicing fluid of Mzik by adding a gelling agent of ferric iron polyvalent metal complex or aluminum polyvalent metal complex in the amount of 0.1% to 2.5% as taught by Taylor et al. in order to minimize volatile phosphorus in refinery distillation towers.

With respect to claims 13 and 29, Mzik does not teach a servicing fluid comprising a delayed gel breaker. However, Taylor et al. teaches adding a delayed gel breaker to a hydrocarbon servicing fluid in order to cause the hydrocarbon fracturing fluid to revert to a thin fluid that is produced back after fractures are formed in the subterranean formation (see column 5 lines 31-35). It would have been obvious to modify the servicing fluid of Mzik by adding a delayed gel breaker as taught by Taylor et al. in order to cause the hydrocarbon fracturing fluid to revert to a thin fluid that is produced back after fractures are formed in a subterranean formation.

6. Claims 11 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mzik in view of Greminger, Jr. et al. (USP 3,954,626).

Mzik does not teach a fracturing fluid which comprises a LPG. Germinger, Jr. et al. teaches a servicing fluid which comprises LPG in order to provide a mixture having a higher critical temperature than carbon dioxide alone (see column 3 lines 29-32). It would have been obvious to modify the invention of Mzik by adding a LPG fluid to the servicing/fracturing fluid as taught by Greminger, Jr. et al. in order to provide a mixture having a higher critical temperature than carbon dioxide alone.

Response to Arguments

7. Applicant's arguments filed 3/31/06 have been fully considered but they are not persuasive.

With respect to claims 1-4, 12, 16-20, 28, and 32 the Applicant argues that the hydrocarbon component in Mzik could comprise a vast number, and even an infinite number, of different blends having concentrations of hydrocarbons having 6 carbons (C6) to 11 carbons (C11), and a person of ordinary skill cannot ascertain whether those concentrations fall within the range recited in claims 1 and 17. However, prior art which teaches a range within, overlapping, or touching the claimed range anticipates if the prior art range discloses the claimed range with sufficient specificity. In the instant case, the prior art range completely encompasses the claimed range. MPEP 2131.03 states: If the claims are directed to a narrow range, the reference teaches a broad range, **and there is evidence of unexpected results within the claimed narrow range**, depending on the other facts in the case, it may be reasonable to conclude that the narrow range is not disclosed with "sufficient specificity" to constitute an anticipation

of the claims (emphasis added). Absent showing of unexpected results within the claimed range, the Examiner finds that Mzik discloses the claimed range with sufficient specificity. The Applicant further argues that the concentrations of C_6-C_{11} hydrocarbons recited in claims 1 & 17 are necessary to optimize both the volatility and safety of the hydrocarbon blends. However, the mere assertion that the claimed hydrocarbons optimize volatility and safety is not a showing of unexpected results. The hydrocarbons of Mzik would necessarily be volatile and safe, as Mzik discloses hydrocarbons in the concentrations of C_6-C_{11}. The Applicant further points out that Mzik teaches adding 5% to 85% by volume of the hydrocarbon component. However, it is noted that the claim recites a limitation of at least 65%. As Mzik discloses a range from 5% to 85%, Mzik discloses at least 65%. MPEP 2131.03 states: If the claims are directed to a narrow range, the reference teaches a broad range, **and there is evidence of unexpected results within the claimed narrow range**, depending on the other facts in the case, it may be reasonable to conclude that the narrow range is not disclosed with "sufficient specificity" to constitute an anticipation of the claims (emphasis added). However, the Applicant has not shown evidence of unexpected results, thus the Examiner finds that Mzik discloses the claimed range with sufficient specificity.

With respect to claims 2 and 18, the Applicant argues that the disclose in Mzik does not enable a person of ordinary skill in the art to at one envisage a hydrocarbon blend that comprises at least about 65% hydrocarbons having seven carbons to ten carbons. However, as noted above, the prior art which teaches a range overlapping the claimed range anticipated if the prior art range discloses the claimed rang with sufficient

specificity. In the instant case, absent a showing of unexpected results, the Examiner finds that Mzik discloses the range claimed in claims 2 and 18 with specific specificity.

With respect to claims 3 and 19, Applicant argues that Mzik only discloses the concentrations for broad ranges of hydrocarbon sizes, which may or may not fall with the ranges in claims 3 and 19. As noted above, an overlapping range in the prior art anticipates the claimed invention, unless there is evidence of unexpected results.

With respect to claims 5 and 21, Applicant argues that Mzik does not teach a hydrocarbon blend that comprises less than 1% hydrocarbon blends by indicating that the hydrocarbons used therein may have as many as 14 carbons. However, Mzik discloses a range of C5 to C14 hydrocarbons, and with routine experimentation it could have been determined to use less than 1% of 10 hydrocarbons. Applicant further argues that the determination of ranges of concentrations of certain hydrocarbons recited in claims 5 and 21 would not be considered "routine experimentation" because Mzik does not teach or recognize that the concentration of hydrocarbons having more than 10 carbons achieves any particular result. However, the burden is not on the prior art reference to show that a claimed range achieves a particular result. As noted in MPEP 2144.05, Applicants can rebut a prima facie case of obviousness based on overlapping ranges by showing the criticality of the claimed range. Applicant has not shown the criticality of a blend that comprises less than 1% hydrocarbons having more than ten carbons.

With respect to claims 6 and 22, Applicant argues that Applicant argues that Mzik does not teach a hydrocarbon blend that comprises less than 1% hydrocarbon blends

having fewer than 7 carbons by indicating that the hydrocarbons used therein may have as few as 5 carbons. However, Mzik discloses a range of C5 to C14 hydrocarbons, and with routine experimentation it could have been determined to use less than 1% of 7 carbons. Applicant further argues that the determination of ranges of concentrations of certain hydrocarbons recited in claims 6 and 22 would not be considered "routine experimentation" because Mzik does not teach or recognize that the concentration of hydrocarbons having fewer than 7 carbons achieves any particular result. However, the burden is not on the prior art reference to show that a claimed range achieves a particular result. As noted in MPEP 2144.05, Applicants can rebut a prima facie case of obviousness based on overlapping ranges by showing the criticality of the claimed range. Applicant has not shown the criticality of a blend that comprises less than 1% hydrocarbons having fewer than 7 carbons.

With respect to claims 14 and 30, the Applicant argues that Mzik teaches away from the claimed ranges. However, as noted above, Mzik discloses a range of 5 to 14 carbons. Absent as showing of criticality, one having ordinary skill in the art would be able to determine through routine experimentation an ideal range of hydrocarbons. The Applicant also argues that this could not be achieved through routine experimentation because Mzik does not teach or recognize that the concentration of hydrocarbons of these sizes achieves any particular result. However, the burden is not on the prior art reference to show that a claimed range achieves a particular result. As noted in MPEP 2144.05, Applicants can rebut a prima facie case of obviousness based on overlapping

ranges by showing the criticality of the claimed range. Applicant has not shown the criticality of the claimed range.

With respect to claims 15 and 31, the Applicant argues that Mzik teaches away from the claimed ranges. However, as noted above, Mzik discloses a range of 5 to 14 carbons. Absent as showing of criticality, one having ordinary skill in the art would be able to determine through routine experimentation an ideal range of hydrocarbons. The Applicant also argues that this could not be achieved through routine experimentation because Mzik does not teach or recognize that the concentration of hydrocarbons of these sizes achieves any particular result. However, the burden is not on the prior art reference to show that a claimed range achieves a particular result. As noted in MPEP 2144.05, Applicants can rebut a prima facie case of obviousness based on overlapping ranges by showing the criticality of the claimed range. Applicant has not shown the criticality of the claimed range.

With respect to claims 7-10, 13, 23-26, and 29, the Applicant argues that as Mzik does not teach or suggest a hydrocarbon blend having the composition recited in claims 1 and 17, the rejections of the claims 7-10, 13, 23-26, and 29 are improper. However, as noted above, Mzik does disclose and suggest a hydrocarbon blend having the composition recited in claims 1 and 17. Thus, the rejections of claims 7-10, 13, 23-26, and 29 remain.

With respect to claims 11 and 27, the Applicant argues that as Mzik does not teach or suggest a hydrocarbon blend having the composition recited in claims 1 and 17, the rejections of the claims 11 and 27 are improper. However, as noted above, Mzik

does disclose and suggest a hydrocarbon blend having the composition recited in claims 1 and 17. Thus, the rejections of claims 11 and 27 remain.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nicole Coy whose telephone number is 571-272-5405. The examiner can normally be reached on M-F 7:30-5:00, 1st F off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bagnell can be reached on 571-272-6999. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

nac

William Neuder
Primary Examiner